RD-27989
D. Goldman
Due - 9-11-03

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/681,652	05/16/2001	Catherine Mary Graichen	RD-27989	1015

6147 7590 06/11/2003

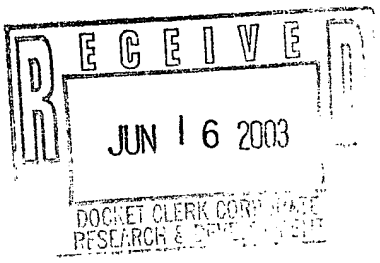
GENERAL ELECTRIC COMPANY
GLOBAL RESEARCH CENTER
PATENT DOCKET RM. 4A59
PO BOX 8, BLDG. K-1 ROSS
NISKAYUNA, NY 12309

EXAMINER	
WILSON, YOLANDA L	
ART UNIT	PAPER NUMBER
2184	

DATE MAILED: 06/11/2003

3

Please find below and/or attached an Office communication concerning this application or proceeding.



PTO-90C (Rev. 07-01)

EXHIBIT A

Office Action Summary	Application No.	Applicant(s)
	09/681,652	GRAICHEN ET AL.
	Examiner	Art Unit
	Yolanda Wilson	2184

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 May 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4,6,9-12,20,23,24,28,29,32,34 and 38* is/are rejected.

7)☒ Claim(s) *3,5,7,8,13-19,21,22,25-27,30,31,33 and 35-37* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Objections

1. Claims 3,5,7-8,13-19,21-22,25-27,30-31,33,35-37 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1,2,4,6,9,10,11,12,20,23,24,28,29,32,34,38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al. (USPN 20020091972A1) in view of Eastman et al. (USPN 6226597B1). As appears in claim 1, Harris et al. discloses a data acquisition component that acquires service data for the plurality of components of at least one of the plurality of subsystems and determines age information and failure information from the service data for each of the plurality of components on page 2, paragraph 0023, "Operating data may consist of machine activity logs, error code logs, sensor logs and service history logs." Harris et al. discloses a statistical analysis component that generates a statistical model according to the age information and failure information on page 2, paragraph 0012, "Predictive models are then created based on the analysis of the first set of historical operating data."

Harris et al. fails to explicitly state a simulation component that predicts future failures for the life cycle of the plurality of components according to the statistical model.

Eastman et al. discloses this limitation in column 4, lines 36-42, "The simulation is based on the probabilistic distributions of the fatigue indication occurrence and fatigue failure life from block 10..."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a simulation component that predicts future failures for the life cycle of the plurality of components according to the statistical model. A person of ordinary skill in the art would have been motivated to have a simulation component that predicts future failures for the life cycle of the plurality of components according to the statistical model because by detecting future failures of system components the operability of the system and its components can be maintained. Eastman et al. discloses in column 2, lines 47-50, "maintaining fatigue critical components in a system that maintains or increases the level of reliability or safety of the system while reducing the operating cost of the system for the system users."

4. As per claims 2,12,23,and 32, Harris et al. fails to explicitly state the statistical model comprises a Weibull distribution model.

Eastman et al. discloses this limitation in column 5, lines 40-43, "Having determined a minimum life for a component a Weibull distribution for the new part may be created by assuming the deterministic minimum predicted life represents a known occurrence probability."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the statistical model comprises a Weibull distribution model. A person of ordinary skill in the art would have been motivated to have the statistical model comprises a Weibull distribution model because the Weibull distribution model is a model that can show the lifetime of a component until it fails. Eastman et al. discloses in column 5, lines 27-30, "Rather, experience has shown that there is a statistical distribution to fatigue failures and that this distribution can be described well using the Weibull cumulative probability function..."

5. As appears in claim 6, Harris et al. discloses a means for acquiring service data for the plurality of components of at least one of the plurality of subsystems and means for determining age information and failure information from the service data for each of the plurality of components on page 2, paragraph 0023, "Operating data may consist of machine activity logs, error code logs, sensor logs and service history logs." Harris et al. discloses means for generating a statistical model that approximates the failure information to the age information on page 2, paragraph 0012, "Predictive models are then created based on the analysis of the first set of historical operating data."

Harris et al. fails to explicitly state means for predicting future failures for the life cycle of the plurality of components according to the statistical model.

Eastman et al. discloses this limitation in column 4, lines 36-42, "The simulation is based on the probabilistic distributions of the fatigue indication occurrence and fatigue failure life from block 10..."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a means for predicting future failures for the life cycle of the plurality of components according to the statistical model. A person of ordinary skill in the art would have been motivated to have a means for predicting future failures for the life cycle of the plurality of components according to the statistical model because by detecting future failures of system components the operability of the system and its components can be maintained. Eastman et al. discloses in column 2, lines 47-50, "maintaining fatigue critical components in a system that maintains or increases the level of reliability or safety of the system while reducing the operating cost of the system for the system users."

6. As per claim 9, Harris et al. discloses at least one data repository containing a plurality of service data for the plurality of subsystems and components, a predictive reliability system that predicts the reliability for the plurality of components of at least one of the plurality of subsystems according to the plurality of service data, the predictive reliability system comprising a data acquisition component that acquires the plurality of service data from the at least one data repository and determines age information and failure information from the service data for each of the plurality of components on page 2, paragraph 0023, "Operating data may consist of machine activity logs, error code logs, sensor logs and service history logs."

Harris et al. discloses a statistical model component that generates a statistical model according to the age information and the failure information on page 2, paragraph 0012, "Predictive models are then created based on the analysis of the first set of

historical operating data." Harris et al. discloses a first computing unit configured to serve the at least on data repository and the predictive reliability system on page 3, paragraph 0028, "The data gathered for the DSE phase will in most cases comprise all of the operating data recorded by the machine's computer control system..."

Harris et al. fails to explicitly state a simulation component that predicts future failures for the life cycle of the plurality of components according to the statistical model.

Eastman et al. discloses this limitation in column 4, lines 36-42, "The simulation is based on the probabilistic distributions of the fatigue indication occurrence and fatigue failure life from block 10..."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a simulation component that predicts future failures for the life cycle of the plurality of components according to the statistical model. A person of ordinary skill in the art would have been motivated to have a simulation component that predicts future failures for the life cycle of the plurality of components according to the statistical model because by detecting future failures of system components the operability of the system and its components can be maintained. Eastman et al. discloses in column 2, lines 47-50, "maintaining fatigue critical components in a system that maintains or increases the level of reliability or safety of the system while reducing the operating cost of the system for the system users."

7. As per claim 10, Harris et al. discloses the at least one data repository stores historical failure data for the complex system on page 2, paragraph 0023, "Operating

data may consist of machine activity logs, error code logs, sensor logs and service history logs."

8. As per claim 11, Harris et al. discloses the at least one data repository stores analysis data for the complex system including data for subsystems and components that form the complex system on page 2, paragraph 0023, "Operating data may consist of machine activity logs, error code logs, sensor logs and service history logs."

9. As per claims 20 and 29, Harris et al. discloses acquiring service data for the plurality of components of at least one of the plurality of subsystems and determining age information and failure information from the service data for each of the plurality of components on page 2, paragraph 0023, "Operating data may consist of machine activity logs, error code logs, sensor logs and service history logs." Harris et al. discloses generating a statistical model that approximates the failure information to the age information on page 2, paragraph 0012, "Predictive models are then created based on the analysis of the first set of historical operating data."

Harris et al. fails to explicitly state predicting future failures for the life cycle of the plurality of components according to the statistical model.

Eastman et al. discloses this limitation in column 4, lines 36-42, "The simulation is based on the probabilistic distributions of the fatigue indication occurrence and fatigue failure life from block 10..."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to predict future failures for the life cycle of the plurality of components according to the statistical model. A person of ordinary skill in the art would

have been motivated to predict future failures for the life cycle of the plurality of components according to the statistical model because by detecting future failures of system components the operability of the system and its components can be maintained. Eastman et al. discloses in column 2, lines 47-50, "maintaining fatigue critical components in a system that maintains or increases the level of reliability or safety of the system while reducing the operating cost of the system for the system users."

10. As per claims 24 and 34, Harris et al. discloses prompting a user to select a plurality of component of at least one of the plurality of subsystems, in response to the user selection, acquiring service data for the selected plurality of components on page 2, paragraph 0013, "Operating data are collected from the targeted one or more machines or processes on an established schedule." Harris et al. discloses determining age information and failure information from the service data for the selected plurality of components on page 2, paragraph 0023, "Operating data may consist of machine activity logs, error code logs, sensor logs and service history logs." Harris et al. discloses generating a statistical model according to the age information and failure information on page 2, paragraph 0012, "Predictive models are then created based on the analysis of the first set of historical operating data."

Harris et al. fails to explicitly state predicting future failures for the life cycle of the plurality of components according to the statistical model.

Eastman et al. discloses this limitation in column 4, lines 36-42, "The simulation is based on the probabilistic distributions of the fatigue indication occurrence and fatigue failure life from block 10..."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to predict future failures for the life cycle of the plurality of components according to the statistical model. A person of ordinary skill in the art would have been motivated to predict future failures for the life cycle of the plurality of components according to the statistical model because by detecting future failures of system components the operability of the system and its components can be maintained. Eastman et al. discloses in column 2, lines 47-50, "maintaining fatigue critical components in a system that maintains or increases the level of reliability or safety of the system while reducing the operating cost of the system for the system users."

11. As per claims 28 and 38, Harris et al. discloses prompting the user to select additional subsystems and components to analyze on page 2, paragraph 0013, "Operating data are collected from the targeted one or more machines or processes on an established schedule."

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al. (USPN 20020091972A1) in view of Eastman et al. (USPN 6226597B1) in further view of McDonald et al. (USPN 6530065B1). Harris et al. and Eastman et al. fail to explicitly state a report generation component that compiles results produced from the simulation component.

McDonald et al. discloses this limitation in column 21, lines 41-43, "the system also provides report generation and marketing feedback information to device manufacturers or suppliers."

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a report generation component that compiles results produced from the simulation component. A person of ordinary skill in the art would have been motivated to have a report generation component that compiles results produced from the simulation component because the report allows others to view the results of the simulation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yolanda Wilson whose telephone number is (703) 305-3298. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (703) 305-9713. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7238 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

ROBERT BEAUSOLIEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Notice of References Cited	Application/Control No. 09/681,652	Applicant(s)/Patent Under Reexamination GRAICHEN ET AL.	
	Examiner Yolanda Wilson	Art Unit 2184	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-2002/0091972 A1	07-2002	Harris et al.	714/47
	B	US-6,226,597 B1	05-2001	Eastman et al.	702/34
	C	US-2002/0078403 A1	06-2002	Gullo et al.	714/37
	D	US-6,557,118 B2	04-2003	Scheleiss et al.	714/37
	E	US-6,324,659 B1	11-2001	Pierro, Michael J.	714/48
	F	US-6,532,426 B1	03-2003	Hooks et al.	702/81
	G	US-5,596,712 A	01-1997	Tsuyama et al.	714/26
	H	US-6,530,065 B1	03-2003	McDonald et al.	716/4
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
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	P					
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NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
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	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

FORM PTO-1449 (REV. 7-80)
(Title Amended 3/83)

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MAY 21 2001

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ATTY. DOCKET NO.	SERIAL NO.
RD-27,989	09/681,652
Applicant: C.A. GRAICHEN, ET AL	
Filing Date: 5/16/01	Group:

INFORMATION DISCLOSURE STATEMENT BY APPLICANT--
LIST OF ITEMS

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	AG						
	AH						
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	AJ						
	AK						

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	AL							
	AM							
	AN							
	AO							
	AP							

OTHER INFORMATION (*Including Author, Title, Date, Pertinent pages. Etc.*)

YLW	AR	A. BASU, ET AL "STATISTICAL METHODS FOR THE RELIABILITY OF REPAIRABLE SYSTEMS, PP. 5 - 92, 1997.
YLW	AS	L. CROW, "RELIABILITY ANALYSIS FOR COMPLEX, REPAIRABLE SYSTEMS, RELIABILITY AND BIOMETRY, STATISTICAL ANALYSIS OF LIFELENGTH, PHILADELPHIA, 1974, PP. 379-410.
	AT	

EXAMINER: Yolanda L. Wilson — DATE CONSIDERED: June 3, 2003

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.